

1 Claims

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3 1. A route guidance system comprising an in-
4 vehicle device and a central route advisory system
5 in which the in-vehicle device comprises an audio
6 emitter and a visual display unit adapted to provide
7 audio and visual instructions to a user to perform
8 manoeuvres required to complete an optimal route,
9 wherein the optimal route is transmitted by the
10 central route advisory system to the in-vehicle
11 device in response to a route request from the user
12 to a human operator in the central route advisory
13 system to a specified destination.

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15 2. A route guidance system as claimed in claim 1
16 wherein the visual display unit is a monochrome
17 display.

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19 3. A route guidance system as claimed in claim 1
20 or claim 2 wherein the system comprises a means for
21 displaying on the visual display unit a junction or
22 roundabout as the vehicle approaches it.

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24 4. A route guidance system as claimed in any one
25 of the preceding claims wherein the system comprises
26 a means for displaying on the visual display unit
27 junctions as pictographs.

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29 5. A route guidance system as claimed in any one
30 of the preceding claims wherein the system comprises
31 means for displaying on the visual display unit
32 roundabouts as pictographs.

1 6. A route guidance system as claimed in claim 4
2 or claim 5 wherein the system comprises a means for
3 indicating on the displayed pictograph the required
4 manoeuvre.

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6 7. A route guidance system as claimed in claim 6
7 wherein the system comprises a means for
8 supplementing the visual instructions to perform a
9 manoeuvre with audible instructions to perform a
10 manoeuvre.

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12 8. A route guidance system as claimed in any one
13 of the preceding claims wherein the visual display
14 unit provides a means of initiating an automatic
15 route request in respect of a stored destination.

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17 9. A route guidance system as claimed in any one
18 of the preceding claims wherein the system comprises
19 a means for displaying on the visual display unit
20 the proximity of speed-cameras.

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22 10. A route guidance system as claimed in any one
23 of the preceding claims wherein the visual display
24 unit is a colour display unit.

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26 11. A route guidance system as claimed in claim 10
27 wherein the system comprises a means for displaying
28 on the colour display unit coloured road-maps of a
29 particular region.

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31 12. A route guidance system as claimed in claim 10
32 or claim 11 wherein the system comprises a means for

1 superimposing onto a coloured road-map the current
2 position of the car.

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4 13. A route guidance system as claimed in any one
5 of claims 10 to 12 wherein the system comprises a
6 means for superimposing onto a coloured road-map the
7 pictograph of a junction or roundabout.

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9 14. A route guidance system as claimed in any one
10 of claims 10 to 13 wherein the system comprises a
11 means for providing a user-face on the colour
12 display unit and a means for enabling a user to make
13 a telephone call.

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15 15. A route guidance system as claimed in any one
16 of claims 10 to 14 wherein the system comprises a
17 means for providing a user-interface on the colour
18 display unit and means for enabling the user to
19 receive a telephone call.

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21 16. A route guidance system as claimed in any one
22 of claims 10 to 15 wherein the system comprises a
23 means for providing a user-interface on the colour
24 display unit and means for enabling the user to
25 receive a text-message.

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27 17. A route guidance system comprising an in-
28 vehicle device and a central route advisory system
29 in which the in-vehicle device comprises units
30 adapted to provide instructions to a user to perform
31 manoeuvres required to complete an optimal route,
32 wherein the optimal route is determined by the

1 central route advisory system using real-time
2 historical traffic data acquired from monitored
3 routes together with archive data acquired from non-
4 monitored routes and transmitted by the central
5 route advisory system to the in-vehicle device in
6 response to a route request from the user to a human
7 operator in the central route advisory system to a
8 specified destination.

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10 18. A route guidance system comprising an in-
11 vehicle device and a central route advisory system
12 in which the in-vehicle device comprises units
13 adapted to provide instructions to a user to perform
14 manoeuvres required to complete an optimal route,
15 wherein the optimal route is calculated by the
16 central route advisory system using a traffic
17 forecasting model and transmitted by the central
18 route advisory system to the in-vehicle device in
19 response to a route request from the user to a human
20 operator in the central route advisory system to a
21 specified destination.

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23 19. A route guidance system as claimed in claim 18
24 wherein the traffic forecasting model is time
25 dependent.

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27 20. A route guidance system as claimed in claim 18
28 or claim 19 wherein the central route advisory
29 system comprises a means of predicting future
30 traffic conditions based on the time at which the
31 route request was received together with the time
32 dependent traffic forecasting model.

1 21. A route guidance system comprising an in-
2 vehicle device and a central route advisory system
3 in which the in-vehicle device comprises units
4 adapted to provide instructions to a user to perform
5 manoeuvres required to complete an optimal route,
6 wherein the optimal route is calculated by the
7 central route advisory system taking into account
8 the previous travelling direction of the vehicle, in
9 response to a route request from the user to a human
10 operator in the central route advisory system to a
11 specified destination, and the optimal route is
12 transmitted by the central route advisory system to
13 the in-vehicle device.

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15 22. A route guidance system comprising an in-
16 vehicle device and a central route advisory system
17 in which the in-vehicle device comprises units
18 adapted to provide instructions to a user to perform
19 manoeuvres required to complete an optimal route,
20 wherein the optimal route is calculated by the
21 central route advisory system taking into account
22 the previous travelling direction of the vehicle, in
23 response to a route request from the user to a human
24 operator in the central route advisory system to a
25 specified destination, and the optimal route is
26 transmitted by the central route advisory system to
27 the in-vehicle device.

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- 1 23. A route guidance method comprising the steps
2 of:
3 (a) receiving a call from a user's in-vehicle
4 device indicating the user's desired
5 destination;
6 (b) entering the user's desired destination
7 into a route-guidance system;
8 (c) determining the current location of the
9 user's vehicle;
10 (d) determining the potential routes to the
11 desired destination;
12 (e) ascertaining traffic conditions along the
13 potential routes;
14 (f) determining the optimal route to the
15 desired destination using the distances of
16 the potential routes and the traffic
17 conditions along the routes;
18 (g) establishing route key-points along the
19 optimal route;
20 (h) associating flags with the route key-
21 points;
22 (i) transmitting the route key-points and
23 flags to the user's in-vehicle device; and
24 (j) providing visual and audio instructions to
25 the user as the user's vehicle approaches
26 the route key-points along the optimal
27 route.

1 24. A route guidance method comprising the steps
2 of:
3 (a) receiving a call from a user's in-vehicle
4 device indicating the user's desired
5 destination;
6 (b) determining the current location of the
7 user's vehicle;
8 (c) entering the user's desired destination
9 into a route-guidance system;
10 (d) determining the potential routes to the
11 desired destination;
12 (e) ascertaining traffic conditions along the
13 potential routes;
14 (f) determining the optimal route to the
15 desired destination using the distances of the
16 potential routes and the traffic conditions
17 along the routes;
18 (g) establishing route key-points along the
19 optimal route;
20 (h) associating flags with the route key-
21 points;
22 (i) transmitting the route key-points and
23 flags to the user's in-vehicle device; and
24 (j) providing instructions to the user as the
25 user's vehicle approaches the route key-points
26 along the optimal route.

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- 1 25. A route guidance method comprising the steps
2 of:
3 (a) receiving a call from a user's in-vehicle
4 device indicating the user's desired
5 destination;
6 (b) entering the user's desired destination
7 into a route-guidance system;
8 (c) determining the current location of the
9 user's vehicle from a dual multi-frequency tone
10 transmission from the user's in-vehicle device;
11 (d) determining the potential routes to the
12 desired destination;
13 (e) ascertaining traffic conditions along the
14 potential routes;
15 (f) determining the optimal route to the
16 desired destination using the distances of the
17 potential routes and the traffic conditions
18 along the routes;
19 (g) establishing route key-points along the
20 optimal route;
21 (h) associating flags with the route key-
22 points;
23 (i) transmitting the route key-points and
24 flags to the user's in-vehicle device; and
25 (j) providing instructions to the user as the
26 user's vehicle approaches the route key-points
27 along the optimal route.
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- 29 26. A route guidance method as claimed in claim 25
30 wherein the current position of the user's vehicle
31 is determined from an ISDN sub-addressing
32 transmission from the user's in-vehicle device.

1 27. A route guidance method comprising the steps
2 of:
3 (a) receiving a call from a user's in-vehicle
4 device indicating the user's desired
5 destination;
6 (b) entering the user's desired destination
7 into a route-guidance system;
8 (c) determining the current location of the
9 user's vehicle;
10 (d) determining the potential routes to the
11 desired destination;
12 (e) ascertaining traffic conditions along the
13 potential routes;
14 (f) determining the optimal route to the
15 desired destination using the distances of the
16 potential routes and the traffic conditions
17 along the routes;
18 (g) establishing route key-points along the
19 optimal route;
20 (h) associating flags with the route key-
21 points;
22 (i) transmitting the route key-points and
23 flags to the user's in-vehicle device;
24 (j) using a route convergence model to
25 determine the direction in which the user's
26 vehicle is travelling once the vehicle
27 commences the journey along the optimal route;
28 and
29 (k) providing visual and audio instructions to
30 the user as the user's vehicle approaches the
31 route key-points along the optimal route.
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1 28. A route guidance method as claimed in claim 27
2 wherein the in-vehicle device uses the route
3 convergence model to display the current route on
4 which the vehicle is travelling.

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